REMARKS

The Office rejects claims 1-14 in the subject application. The Applicant respectfully traverses this rejection and submits that the features of the claimed invention are not anticipated nor obvious over the cited references. Claims 1-14 (2 independent claims; 14 total claims) remain pending in the application. Reconsideration of this application is respectfully requested.

Limitations in the Independent Claims

The Office rejected claims 1, 5, 7-12, and 14 under 35 U.S.C. §102(b) as allegedly being anticipated by Arai[1]. Applicants submit that Arai does not teach or suggest all of the limitations of either independent claim 1 or independent claim 8. Applicants further submit that, even if combined, none of the references cited teach or suggest all of the limitations of the independent claims.

Light Section

Independent claim 1 recites "a light section for irradiating light to each of the bonded portions of the plurality of electrode plates and the power collecting plate of the electrode plate-connected structure for a secondary cell". One potential advantage of this feature is that an image of each of the fillets properly spaced in parallel to the longitudinal direction thereof may be captured, as disclosed in the specification on page 17, line 27 to page 18, line 13.

The Office asserts that this feature is taught in Arai discloses an inspection device for an electrode plate group of a storage battery. Specifically, Arai discloses an illuminator (14, Figure 1 of the English translation) formed on the slanting side of the CCD camera, (paragraph 12), such that light is irradiated by the crowning of the group of electrodes (paragraph 13). To clarify, Arai simply teaches applying a light source such that light reflecting off of the top (crown) of the electrodes may be measured. The only purpose of this is to measure the difference between white (separators) and black (plates) electrodes (paragraph 16).

The present invention, in stark contrast, specifically claims a light section for irradiating light to each of the bonded portions of the plurality of electrode plates and the power collecting plate of the electrode plate. The device of Arai clearly does not disclose light irradiating from all the way down to the bonded portions of the electrode plates, nor does it disclose light irradiation from the power collecting plate. It simply discloses light irradiating from the crown of the electrodes.

[1] JP 11073948, published March 16, 1999, assignee is Furukawa Battery Co. Ltd.

PAGE 3/8 * RCVD AT 1/18/2005 6:50:01 PM [Eastern Standard Time] * SVR:USPTO-EFXRF-1/6 * DNIS:8729306 * CSID:602 382 6070 * DURATION (mm-ss):02-38

Since the aforementioned feature of claim 1 is clearly not taught, suggested, or disclosed in Arai, the present invention is novel over Arai. Accordingly, the anticipation rejection of claim 1 should be withdrawn. Furthermore, independent claim 8 also recites the aforementioned feature, and is therefore novel over Arai Therefore, the anticipation rejection of claim 8 should be withdrawn.

Regarding the other cited references, Honda discloses a solder testing apparatus. Specifically, Honda discloses a slit light projector which is capable of irradiating an object under testing (i.e. a lead) through a galvanomirror. This procedure only irradiates one object at a time. It furthermore only irradiates a single portion of the pad (upon which the lead is attached to) at a time. Furthermore, it necessarily requires a scanning procedure (Honda, column 4, lines 7-47). This is clearly different than the cited feature of the present invention, wherein a light section is provided for irradiating light to each of the bonded portions of the plurality of electrode plates and the power collecting plate of the electrode plate-connected structure for a secondary cell. Honda only discloses irradiating a single lead and a single portion of the pad.

Stavis discloses a device for calculating linear dimensions from TV images. Stavis does not disclose a lighting section for irradiating light to each of the bonded portions of the plurality of electrode plates and the power collecting plate of the electrode plate-connected structure for a secondary cell.

Since the aforementioned feature of claims 1 and 8 is not taught, suggested, or disclosed by either Arai or any combination of Arai and Honda or Arai and Stavis, independent claims 1 and 8 and the claims dependent thereon are novel and unobvious over the cited references. Therefore, the present rejections should be withdrawn.

Evaluating a Bonding State

As an additional reason for allowance, Independent claim 1 recites "an evaluation section for evaluating a bonding state of each of the bonding portions". One potential advantage of this feature is that the bonding states of the fillets may be evaluated as to whether or not they are satisfactory, as disclosed in the specification on page 15, lines 11-20.

The Office asserts that this feature is taught in Arai. Arai discloses an inspection device for a group of electrode plates in a storage battery. Specifically, Arai discloses a device that simply computes the number of separators 3 (Figure 1 of the English translation), the pitch

PAGE 4/8 * RCVD AT 1/18/2005 6:50:01 PM [Eastern Standard Time] * SVR:USPTO-EFXRF-1/6 * DNIS:8729306 * CSID:602 382 6070 * DURATION (mm-ss):02-38

of (distance between) the separators (P in Figure 2 of the English translation), and determines whether the number and position of the separators is proper.

The present invention, in stark contrast, specifically claims an evaluation section for evaluating a bonding state of each of the bonding portions. Since the aforementioned feature of claim 1 is clearly not taught, suggested, or disclosed in Arai, the present invention is novel over Arai. Accordingly, the anticipation rejection of claim 1 should be withdrawn. Furthermore, independent claim 8 also cites the aforementioned feature, and is therefore novel over Arai Therefore, the anticipation rejection of claim 8 should be withdrawn.

Regarding the other references cited, Honda discloses a solder testing apparatus. Specifically, Honda discloses a device for determining the thickness and lift amount of a lead from a pad to determine whether or not a lead has been "misplaced" on a pad (column 4, line 65 to column 5, line 20). This is clearly different than the cited feature of the present invention, wherein the bonding state of each of the bonding portion is evaluated.

Stavis discloses a device for calculating linear dimensions from TV images. Stavis does not disclose a device consisting of an evaluation section for evaluating a bonding state of each of the bonding portions based on the projected image of each of the bonded portions detected by the light receiving section.

Since the aforementioned feature of claims 1 and 8 is not taught, suggested, or disclosed by either Arai or any combination of Arai and Honda or Arai and Stavis, independent claims 1 and 8 and the claims dependent thereon are novel and unobvious over the cited references. Therefore, the present rejections should be withdrawn.

Limitations in the Dependant Claims

The remaining dependent claims, 2-7 and 9-14 are believed to be allowable for at least the same reasons as the claims from which they depend. Applicants submit that additional reasons for allowability exist for at least some of the dependent claims.

PAGE 5/8 * RCVD AT 1/18/2005 6:50:01 PM [Eastern Standard Time] * SVR:USPTO-EFXRF-1/6 * DNIS:8729306 * CSID:602 382 6070 * DURATION (mm-ss):02-38

Arai Reference (Claims 2 and 9)

The Office rejects claims 2 and 9 under 35 U.S.C. §103(a) as allegedly being unpatentable over Arai. Based on the foregoing discussion of claims 1 and 8 and the Arai reference, claims 2 and 9 (which depend from claims 1 and 8) are also patentable over Arai.

In addition, claim 2 requires that "the light receiving section receives light passing through both sides of each of the electrode plates of the electrode plate-connected structure for a secondary cell". Claim 9 has a similar limitation. However, Arai discloses separators 3 between each of the electrode plates 2[2]. No space is shown between the separators 3 and electrode plates 2. Consequently, as taught by Arai, no light can pass on either side of the electrode plates. As such, Arai does not teach or suggest this claim limitation. Furthermore, since light cannot pass through either side of the electrode plates, Arai teaches away from the claimed invention of claims 2 and 9. Still further, if Arai were modified to allow light to pass through both sides of the electrode plates, then Arai would be inoperative for its intended purpose, namely detecting the number and position of separators. Consequently, Arai does not obviate these claims.

Arai and Honda References (Claims 3 and 10)

The Office rejected claims 3 and 10 under 35 U.S.C. §103(a) as allegedly being unpatentable over Arai in view of Honda[3]. Based on the foregoing discussion of claims 1 and 8 and the Arai reference, claims 3 and 10 (which depend from claims 1 and 8) are also patentable over Arai in view of Honda.

Honda discloses a system that processes images to evaluate solder bonds to circuit boards[4]. The Office states that Arai and Honda are analogous art "because they are from the same field of endeavor of inspection using image processing." However, Applicants submit that neither of these references are analogous art under M.P.E.P. § 2141.01(a). In order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the invention was concerned.

The claimed invention relates to an apparatus and method for inspecting an electrode plate-connected structure for a secondary cell for inspecting each bonding portion of an electrode

[2] As shown in the figures.
[3] U.S. Patent No. 6,249,598, issued June 19, 2001 to assignee Hitachi, Ltd.
[4] Col. 2, lines 1-8.

PAGE 6/8 * RCVD AT 1/18/2005 6:50:01 PM [Eastern Standard Time] * SVR:USPTO-EFXRF-1/6 * DNIS:8729306 * CSID:602 382 6070 * DURATION (mm-ss):02-38

plate-connected structure for a secondary cell[5]. Arai is concerned with detection of the number and position of separators, entirely different components than those addressed by the claimed invention. Further, Honda is even less analogous, as Honda is not even concerned with problems related to inspection of a secondary cell or related device.

Further, Honda does not disclose the claim elements specifically recited in claims 3 and 10. Specifically, claim 3 includes "measuring a height of a lowest point of each of the bonded portions". Claim 10 includes a similar limitation. This makes sense in the claimed invention, because the fillets 14[6] extend from one plate to the next. However, in Honda, the solder does not extend from one lead to the next. If it did, the solder would electrically connect adjacent leads and render the chip inoperable for its intended purpose. Consequently, Honda relies on a "maximum height of a solder fillet"[7] rather than a "lowest point" as recited in claim 3. As such, Honda teaches away from claims 3 and 10. Furthermore, modification of Honda to add the missing claim element would render the invention of Honda inoperative for its intended purpose of testing solder connections on a circuit board. Consequently, Arai and Honda do not obviate these claims.

Arai and Stavis References (claims 4 and 11)

Finally, the Office rejected claims 4 and 11 under 35 U.S.C. §103(a) as allegedly being unpatentable over Arai in view of Stavis[8]. Based on the foregoing discussion of claims 1 and 8 and the Arai reference, claims 4 and 11 (which depend from claims 1 and 8) are also patentable over Arai in view of Stavis.

Stavis discloses a system for calculating linear dimensions of objects from video images[9]. First Applicants submit that Stavis is not analogous prior art, because Stavis is not concerned with problems related to inspection of an electrode plate-connecting structure for a secondary cell. Second, Arai and Stavis combined do not teach or suggest the additional claim limitations recited in claims 4 and 11. Specifically, these references do not teach or suggest detecting "a thickness of each of a plurality of the electrode plates" as recited in claim 4. Claim 11 has a similar limitation. The Office states that it is well known to measure the width of plates, but Applicants dispute this unsupported conclusion and request that the Office either withdraw it or

[5] See the preambles of claims 1 and 8 and the Field of the Invention section.
[6] As shown in FIGS. 6A to 6C, for example.
[7] Col. 9, line 32.
[8] U.S. Patent No. 3,773,422, issued November 20, 1973 to assignee The Singer Company.
[9] abstract.

PAGE 7/8 * RCVD AT 1/18/2005 6:50:01 PM [Eastern Standard Time] * SVR:USPTO-EFXRF-1/6 * DNIS:8729306 * CSID:602 382 6070 * DURATION (mm-ss):02-38

provide a reference to support it. Applicants further submit that Arai is concerned only with the detection of the number and position of the separators, and would have no reason to detect the thickness of electrode plates. Stavis, on the other hand, does not teach or suggest electrode plates or the detection of any property of electrode plates. Consequently, Arai and Stavis do not obviate these claims.

CONCLUSION

Applicant respectfully submits that the present application is in condition for allowance. Reconsideration of the application is thus requested. Applicant invites the Office to telephone the undersigned if he or she has any questions whatsoever regarding this Response or the present application in general.

Respectfully submitted,

By: _____
Allan W. Watts
Reg. No. 45,930

SNELL & WILMER L.L.P.
One Arizona Center
400 East Van Buren
Phoenix, Arizona 85004-2202
Phone: (602) 382-6267
Fax: (602) 382-6070
Email: awatts@swlaw.com

1622316.1

PAGE 8/8 * RCVD AT 1/18/2005 6:50:01 PM [Eastern Standard Time] * SVR:USPTO-EFXRF-1/6 * DNIS:8729306 * CSID:602 382 6070 * DURATION (mm-ss):02-38